H. P. Howard.
CONVERTIBLE STOCK AND BOX CAR.
APPLICATION FILED SEPT. 13, 1910.
Patented Dec. 12, 1911.
4 SHEETS-SHEET 2.

[Diagram of a convertible stock and box car with various labeled parts.

Witnesses

H. P. Howard

Attorney.
H. P. HOWARD.

CONVERTIBLE STOCK AND BOX CAR.

APPLICATION FILED SEPT. 12, 1910.

Patented Dec. 12, 1911.

4 SHEETS—SHEET 3.
To all whom it may concern:

Be it known that I, HASTING P. HOWARD, a citizen of the United States, residing at Memphis, in the county of Shelby and State of Tennessee, have invented certain new and useful Improvements in Convertible Stock and Box Cars, of which the following is a specification.

This invention relates to freight cars and 10 more particularly to that class of cars known as convertible stock and box cars.

The object of the invention is to provide a stock car of simple and durable construction, capable of being readily converted into 15 a box car so as to permit said car to be used for transporting grain, fruit and other commodities.

A further object is to provide a car, the side walls of which are formed in sections, each provided with movable slats or panels adapted, when closed, to prevent the escape of grain or other material, and when open, to permit ventilation of the interior of said car.

A further object is to provide the stationary and movable panels of each car section with interengaging parts, thereby to insure a tight joint at the junction of the panels and prevent leakage.

A further object is to provide each car section with a vertically movable gate to which are secured the movable slats or panels, said gates being connected with the body of the car in such a manner that when the gates are lowered, the stationary and movable panels will overlap, and when the gates are raised, the movable panels will fit between said stationary panels and thus form a closure for the car.

A further object is to provide the outer face of each car section with a movable shutter so as to prevent the entrance of rain or snow to the interior of the car.

A still further object of the invention is generally to improve this class of cars so as to increase their utility, durability and efficiency.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims.

For a full understanding of the invention and the merits thereof, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a perspective view of a convertible stock and box car constructed in accordance with my invention, the gates and shutters on one side of the car door being shown elevated to permit ventilation and the gates and shutters on the other side of said door being shown lowered to form a closed car; Fig. 2 is a vertical sectional view, looking at the inner face of one of the car sections; Fig. 3 is a horizontal sectional view taken on the line 3—3 of Fig. 2; Fig. 4 is a vertical sectional view, showing the movable panels in closed position and the metalic shutter lowered; Fig. 5 is a similar view, showing the movable panels in open position and the shutter elevated; Fig. 6 is a vertical sectional view, showing the movable panels in closed position and the shutter elevated; Fig. 7 is a detail perspective view partly in section, showing the construction of the division posts and casing or housing for the same; Fig. 8 is a detail perspective view of a portion of one of the car sections, showing the manner of supporting the brace for the stationary slats or panels; Fig. 9 is a perspective view of a portion of one of the sliding gates and the adjacent stationary post, the parts being separated to more clearly illustrate the same; Fig. 10 is a side elevation of one of the connecting links detached.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The improved car forming the subject matter of the present invention comprises a body portion 5 mounted on the usual front 95 and rear trucks 6 and 7 and provided with an inner lining 8 and an outer lining 9 extending for a portion of the height of the car, as shown. The opposite sides of the car are provided with stationary division posts 10 forming a plurality of independent sections 11, there being preferably three sections disposed on each side of the door 12, as best shown in Fig. 1 of the drawings. Arranged on opposite sides of each division post 10 are loose or auxiliary posts 13 having flat plates 14 secured thereto and on which are pivotally mounted a plurality of spaced links 15. Spaced from the posts 13 are stationary posts or uprights 16, to the 110
inner longitudinal edges of which are secured in any suitable manner, spaced stationary slats or panels 17. Disposed at each section 11 of the car, is a vertically movable gate including end pieces 18, preferably formed of angle iron and connected by spaced relatively movable slats 19, the end flanges 20 of the members 18 being extended within the chambers 21 formed between the posts 13 and 16 and operatively connected with the links 15. The links 15 are preferably in the form of flat substantially elliptical plates having pins 22 extending laterally from the opposite faces thereof, one of the pins or lugs 22 of each link being pivotally mounted in the adjacent plate 14 and the other pin or lug thereof pivotally connected with the flange 20 of the adjacent movable gate. The links 15 are so constructed that when an outward and downward movement is imparted to the slats 19, said movable slats will overlap the stationary slats 17 so as to permit ventilation of the interior of the car, and when an upward and inward movement is imparted to the movable slats, said movable slats will fit between the stationary slats so as to effectually close the openings between said stationary slats and thus permit the car to be used as an ordinary closed or box car.

The stationary slats 17 are reinforced and strengthened by the provision of a diagonally disposed brace 23, which latter extends from the lower sill 24 of the car to a point adjacent the upper sill 25 thereof. Secured to the exterior of the car at each section thereof, is a casing 26 preferably formed of channel iron and which serves to house and protect the posts 10, 13 and 16 and assist in holding the latter in assembled position.

The end flanges 27 of each channel bar or casing 26 are extended inwardly in contact with the adjacent post or standard 16 and thence bent laterally to form terminal beads or hooks 28 defining vertically disposed grooves 29, which latter serve to conduct any water which may drip from the top of the car downwardly to the lower sill thereof. One of the flanges of each casing 26 is extended laterally at the lower sill 24 to form an anchoring ear 30 to which is rigidly secured the adjacent end of the inclined brace 23, there being a similar car extending laterally from the mating flange near the upper sill 25 and to which is anchored the other end of the inclined brace 23.

The outer faces of the stationary slats 17 are preferably provided with metal plates 31, the opposite longitudinal edges of which are curved inwardly to form terminal lips 32, which latter enter corresponding seating grooves 33 formed in the adjacent faces of the movable slats or panels 19 when said movable slats are in closed position, thus to form a tight joint at the junction of the stationary and movable slats and consequently prevent leakage. The inner faces of the relatively movable slats 19 are also preferably covered by metallic plates 34 to which is riveted, bolted or otherwise secured a diagonal brace 35, said brace extending from the upper end of one of the end plates 18 of each gate to the lower end of the mating end plate and serving to assist in retaining said movable panels or slats in spaced parallel relation.

The lower longitudinal edges of the plates 34 are curved inwardly at 36, the upper longitudinal edges of the stationary slats or panels 17 being correspondingly inclined or curved, as indicated at 37 so as to permit the panels 19 to be moved to closed position between the stationary slats, as illustrated in Fig. 4, or to open position in overlapped relation with respect to the stationary slats, as illustrated in Fig. 5, without wedging or binding action between the parts.

It will here be noted that when the gates carrying the relatively movable slats 19 are moved upwardly and inwardly, the lips 32 on the stationary slats or panels 17 will enter the seating grooves 33, while the inner faces of the movable panels will be disposed substantially flush, or in vertical alignment with the inner faces of the stationary panels so as to present a smooth, unobstructed surface at the interior of the car and thus prevent the lodgment of grain and the like on said panels when the car is converted from a stock to a box car. It will also be noted that when the gates are swung outwardly and downwardly, the movable panels will overlap the stationary panels so as to permit the free circulation of air through the opposite sides of the car and thus permit ventilation of the contents thereof.

Bearing against the flanges 27 of each casing 26 are channel irons 38 which form guides for a vertically movable shutter 39, the latter being preferably formed of a plurality of metallic sections having interengaging parts, as indicated at 40. The channel irons 38 are inclined upwardly in the direction of the top of the car so as to permit the shutter 39 to be moved to elevated position when the car is used as a stock car, said shutter being retained in elevated position by a latch 41 pivotally mounted at 42 on the lower edge of the outer lining 9. The latch 41 is provided with a longitudinally disposed finger which extends in the path of movement of the shutter 39, there being a seating recess 43 formed in the outer lining or in a suitable block secured to said lining so as to permit the extension of the latch and to be moved upwardly within the seating recess 43 and out 110
of the path of the shutter 39 when it is desired to lower said shutter and thus prevent the entrance of snow or rain to the interior of the car.

Attention is here called to the fact that the free edge of the metal constituting the bead or hook 28 bears against the channel iron 38 so as to form in effect a conductor for the water entering the top of the car or dripping from the roof thereof, as before stated.

Secured to the inner lining 8 of the car is a locking member, preferably in the form of a bolt 44 adapted to bear against the movable panels and hold the latter in position between the stationary panels when using the device as a box car. A metallic strip 45 is preferably secured to the inner face of the inner lining 8 at the lower edge thereof for engagement with the upper panel of the adjacent gate when said gate is moved to closed position, as best shown in Fig. 4 of the drawings. Thus it will be seen that by moving the gates of the car inwardly and downwardly and the shutter 39 upwardly, said car may be used for carrying stock or as a ventilated car, while by moving the gates to closed positions, said stock car may be readily converted into an ordinary box car. It will also be noted that by forming the side walls of the car in sections, any particular portion of the car may be ventilated to the exclusion of the other, the movable shutter 39 forming a complete housing or protection for the car when in lowered position.

Detachably secured to the inner face of the car at each division post 10, is a retaining plate or strip 46 which forms a closure for the division post and auxiliary posts 13 and serves to prevent accidental displacement thereof. By using the described devices, the strips 46 may be readily detached so that access may be had to the links when it is necessary to effect any repairs thereto.

Suitable staples or eyes 47 are preferably secured to each sliding gate for engagement with an operating tool or hook so that by inserting the bill of the hook or tool in said eyes and pulling outwardly thereon, the movable slats may be disengaged from the stationary slats when it is desired to convert the car from a closed to a ventilated car.

While it is preferred to employ three or more links for connecting the movable gates with the posts 13, it will of course be understood that any number of said links may be used without departing from the spirit of the invention.

It will also be understood that the stationary and movable slats may be formed either entirely of wood or metal or of a combination of wood and metal, as desired.

The car shown in Fig. 1 of the drawings is provided with movable panels at the ends and sides thereof, as well as on the door 12, but it will be understood that the door and end walls of the car may be solid, or of the usual construction, if desired.

Having thus described the invention, what is claimed as new is:

1. A convertible stock and box car including spaced division posts defining a plurality of sections, auxiliary posts disposed on opposite sides of the division posts, standards spaced from the auxiliary posts to form intermediate chambers, stationary panels secured to the standards, vertically movable gates having spaced panels adapted to fit between the stationary panels when in one position and overlap said stationary panels when in another position, said gates being provided with angle flanges adapted to fit in the chambers, and links housed within said chambers and pivotally connected with the auxiliary posts and end flanges.

2. A convertible stock and box car including spaced division posts defining intermediate sections, auxiliary posts disposed on opposite sides of the division posts, standards spaced from the auxiliary posts, stationary panels connecting said standards, vertically movable gates disposed at said sections and provided with spaced panels adapted to fit between the adjacent stationary panels, links forming a pivotal connection between the auxiliary posts and ends of the adjacent gates, and casings forming housings for the division posts, auxiliary posts and standards.

3. A convertible stock and box car including a body portion having spaced division posts defining a plurality of independent sections, auxiliary posts disposed on opposite sides of the division posts, standards spaced from the auxiliary posts to form intermediate chambers, standards connecting said standards, vertically adjustable gates having end flanges seated within the adjacent chambers and provided with spaced panels adapted to fit within the adjacent stationary panels when the gates are elevated and to overlap the stationary panels when the gates are lowered, links housed within the chambers and provided with oppositely disposed pins for engagement with the auxiliary posts and ends of the gates, respectively, casings covering the outer faces of the division posts, auxiliary posts and standards, respectively, and provided with terminal beads defining vertical grooves, and guides bearing against said beads.

4. A convertible stock and box car including a body portion having spaced division posts defining a plurality of sections, auxiliary posts disposed on opposite sides of the division posts, standards spaced from the auxiliary posts to form intermediate chambers, casings extending across the outer
edges of the division posts and auxiliary posts and engaging the standards to form closures for said chambers, stationary panels secured to the standards, vertically movable gates having spaced horizontal panels adapted to fit between the stationary panels, links forming a pivotal connection between the gates and auxiliary posts and housed within said chambers, and lips carried by each stationary panel and adapted to engage two of the panels of the adjacent gate when said gate is moved to closed position.

5. A convertible stock and box car including a body portion having spaced division posts defining a plurality of sections, auxiliary posts disposed on opposite sides of the division posts, standards spaced from the auxiliary posts to form intermediate chambers, casings extending across the outer edges of the division posts and auxiliary posts and engaging the standards to form closures for said chambers, stationary panels secured to the standards, an intermediate brace connecting said stationary panels, a vertically movable gate having spaced horizontal panels adapted to fit between the stationary panels when the gate is in one position and to overlap said stationary panels when the gate is in another position, an inclined brace connecting the panels on the gate, links forming a connection between said gate and auxiliary posts and housed within said chambers, and a locking device secured to the car and adapted to engage the gate for holding the panels thereof in closed position.

6. A convertible stock and box car including spaced division posts defining intermediate sections, auxiliary posts disposed on opposite sides of the division posts, standards spaced from the auxiliary posts to form intermediate chambers, vertical strips secured to the inner longitudinal edges of the adjacent auxiliary posts, casings extending across the outer longitudinal edges of the division posts and auxiliary posts and engaging the standards, stationary panels connecting said standards, vertically movable gates disposed at said sections and provided with spaced panels adapted to fit between the adjacent stationary panels, links housed within said chambers and forming a pivotal connection between the auxiliary posts and adjacent gates, and plates secured to the stationary panels and having their opposite longitudinal edges extended beyond the adjacent edges of said panels and curved laterally to form lips for engagement with corresponding recesses in the panels of the gates.

7. A convertible stock and box car including a body portion having spaced division posts defining intermediate sections, auxiliary posts disposed on opposite sides of the division posts, standards spaced from the auxiliary posts to form intermediate chambers, vertical strips secured to the inner longitudinal edges of the division posts and overlapping the longitudinal edges of the adjacent auxiliary posts, casings extending across the outer edges of the stationary and auxiliary posts and engaging the standards to form closures for the chambers, stationary horizontal panels connecting said standards, vertically movable gates having spaced horizontal panels adapted to fit between the standards, links housed within said chambers and forming a pivotal connection between the posts and adjacent gates, and means carried by each stationary panel and adapted to engage two of the panels on the adjacent gate when said gates are moved to closed position.

8. A convertible stock and box car including a body portion having spaced division posts defining a plurality of sections, auxiliary posts disposed on opposite sides of the division posts, standards spaced from the auxiliary posts to form intermediate chambers, casings extending across the outer longitudinal edges of the division and auxiliary posts and engaging the standards to form closures for said chambers, the adjacent longitudinal edges of the casings being bent laterally to form vertically disposed draining grooves, stationary panels secured to the standards, vertically movable gates having spaced horizontal panels adapted to fit between the stationary panels, links forming a pivotal connection between the gates and auxiliary posts and housed within said chambers, and lips carried by each stationary panel and adapted to engage two of the panels of the adjacent gate when said gate is moved to closed position.

In testimony whereof I affix my signature in presence of two witnesses.

HASTING P. HOWARD. [L. S.]

Witnesses:

J. H. CARTWRIGHT,
M. W. SHIPLEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."